CLAIMS

What is claimed is:

1. A speech encoding system for encoding a speech data signal including a plurality of frames, said speech encoding system comprising:

a speech data rate determinator; and

a plurality of speech data signal encoders;

wherein said speech data rate determinator determines a data rate of each of said frames and selects one of plurality of said speech data signal encoders according to each of said data rates of each said frame.

2. The system of claim 1, wherein each of said frames is about 10 ms in length.

3. The system of claim 1, wherein said data signal includes a first frame and a second frame, and wherein said first frame is encoded using a first one of said plurality of said data signal encoders and said second frame is encoded using a second one of said plurality of said data signal encoders.

4. The system of claim 1, wherein said plurality of speech encoders include G.727 ITU compliant speech encoders.

5. The system of claim 1, wherein said plurality of speech encoders include G.729 ITU compliant speech encoders of 0, 8.0 and 11.2 kbps data rates and G.723.1 ITU compliant speech encoders of 5.3 and 6.4 kbps data rates.

6. The system of claim 1, wherein said system is a variable bit-rate speech encoding system and each of said speech data signal encoders operates at a different fixed bit-rate.

7. The system of claim 1, wherein said frames are in about 5 ms intervals.

8. The system of claim 1, wherein said plurality of speech encoders include existing fixed bit-rate encoders.

9. The system of claim 1, wherein said plurality of speech encoders include GSM EFR, IS-641 and GSM AMR compatible encoders.

10. A speech encoding system for encoding a speech data signal including a plurality of frames, said speech encoding system comprising:

a speech data rate determinator; and

a plurality of speech data signal encoders;

a network controller capable of selecting at least two of said plurality of speech encoders; and

wherein said speech data rate determinator determines a data rate of each of said frames and selects, according to each of said data rates of each said frame, one of said speech data signal encoders selected by said network controller.

11. The system of claim 10, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 1.5, 6.4, 8.0 and 11.2 kbps data rates.

12. The system of claim 10, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 8.0 and 11.2 kbps data rates and G.723.1 ITU compliant speech encoders of 5.3 and 6.4 kbps data rates.

13. The system of claim 10, wherein said network controller is capable of selecting two or more speech encoder groups, wherein each of said groups includes at least one of said speech encoders and one of said groups includes at least two of said speech encoders.

14. The system of claim 13, wherein said speech encoder groups are mutually exclusive.

15. The system of claim 13, wherein one of said groups includes G.729 ITU compliant speech encoders of 0, 1.5, 8.0 kbps and another one of said groups includes G.721 compliant speech encoder of 32 kbps.

16. A method of encoding a speech signal including a plurality of speech signal frames, said encoding method comprising the steps of:

determining a data rate of one of said speech signal frames;

selecting one of a plurality of speech encoders according to said data rate; and

encoding said one of said speech signal frames using said one of said plurality of speech encoders;

wherein said determining, selecting and encoding steps are repeated so as to encode said speech signal frame-by-frame.

17. The method of claim 16, wherein each of said frames contains about 10 ms of speech signal.

18. The method of claim 16, wherein said data signal includes a first frame and a second frame, and wherein said first frame is encoded using a first one of plurality of said data signal encoders and said second frame is encoded using a second one of plurality of said data signal encoders.

19. The method of claim 16, wherein said data signal is a single frame of an active speech signal.

20. The method of claim 16, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 1.5, 6.4, 8.0 and 11.2 kbps data rates.

21. The method of claim 16, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 8.0 and 11.2 kbps data rates and G.726 ITU compliant speech encoders of 24.0 and 40.0 kbps data rates.

22. A method of encoding a speech signal including a plurality of speech signal frames, said encoding method comprising the steps of:

choosing, according to a predetermined factor, one group of plurality of speech encoders from a plurality of groups of speech encoders;

determining a data rate of one of said speech signal frames;

selecting, according to said data rate, one of said plurality of speech encoders in said chosen group; and

encoding said one of said speech signal frames using said selected speech encoder;

wherein said determining, selecting and encoding steps are repeated so as to encode said speech signal frame-by-frame.

23. The method of claim 22, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 1.5, 6.4, 8.0 and 11.2 kbps data rates.

24. The method of claim 22, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 8.0 and 11.2 kbps data rates and G.723.1 ITU compliant speech encoders of 5.3 and 6.4 kbps data rates.

25. The method of claim 22, wherein said network controller is capable of selecting two or more speech encoder groups, wherein each of said groups includes at least one of said speech encoders and one of said groups includes at least two of said speech encoders.

26. The method of claim 25, wherein said speech encoder groups are mutually exclusive.

27. The method of claim 25, wherein one of said groups includes G.729 ITU compliant speech encoders of 0, 1.5, 8.0 kbps and another one of said groups includes G.721 compliant speech encoder of 32 kbps.

28. An encoding system comprising:

a data rate determinator; and

a plurality of data signal encoders;

wherein said data rate determinator determines a data rate of a data signal and selects one of plurality of said data signal encoders according to said data rate for encoding said data signal.

29. The system of claim 28, wherein said data signal is a single frame of an active speech signal.

30. The system of claim 28, wherein said frame contains about 10 ms of speech signal.

31. The system of claim 28, wherein said data signal includes a plurality of frames of data, and wherein said data rate determinator determines a data rate for each of said frames and selects one of said plurality of said data signal encoders according to said data rate of each of said frames for encoding each of said frames.

32. The system of claim 28, wherein said data signal includes a first frame and a second frame, and wherein said first frame is encoded using a first one of said plurality of said data signal encoders and said second frame is encoded using a second one of said plurality of said data signal encoders.

33. The system of claim 28, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 1.5, 6.4, 8.0 and 11.2 kbps data rates.

34. The system of claim 28, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 8.0 and 11.2 kbps data rates and G.723.1 ITU compliant speech encoders of 5.3 and 6.4 kbps data rates.

35. An encoding system comprising:

a plurality of speech encoders;

a network controller capable of selecting at least two of said plurality of speech encoders; and

a data rate determinator capable of determining a data rate of a speech signal and selecting, according to said data rate, one of said speech encoders selected by said network controller.

36. The system of claim 35, wherein said speech signal includes a plurality of frames, and wherein said data rate determinator determines a data rate of each of said frames and selects, according to each said data rate, one of said speech encoders selected by said network controller.

37. The system of claim 35, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 1.5, 6.4, 8.0 and 11.2 kbps data rates.

38. The system of claim 35, wherein said plurality of said speech encoders include G.729 ITU compliant speech encoders of 0, 8.0 and 11.2 kbps data rates and G.722 ITU compliant speech encoder of 64.0 kbps data rate.

39. The system of claim 35, wherein said network controller is capable of selecting two or more speech encoder groups, wherein each of said groups includes at least one of said speech encoders and one of said groups includes at least two of said speech encoders.

40. The system of claim 39, wherein said speech encoder groups are mutually exclusive.

41. The system of claim 39, wherein one of said groups includes G.727 ITU compliant speech encoders of 16.0 and 24.0 kbps and another one of said groups includes G.721 compliant speech encoder of 32 kbps.